

PATENT SPECIFICATION

(11) 1 431 045

1 431 045

(21) Application No. 18315/72 (22) Filed 20 April 1972
 (21) Application No. 16899/73 (22) Filed 9 April 1973
 (23) Complete Specification filed 11 July 1973
 (44) Complete Specification published 7 April 1976
 (51) INT CL⁵ A24B 13/00
 (52) Index at acceptance A2C 20J2
 (72) Inventors GEORGE PORTER and DENNIS BOYD



(54) SYNTHETIC SMOKING PRODUCT

(71) We, GALLAHER LIMITED, a 5
 British company, of 138 York Street, Belfast,
 Northern Ireland, do hereby declare the inven-
 tion, for which we pray that a patent may be
 granted to us, and the method by which it is to
 be performed, to be particularly described in
 and by the following statement:—

It is generally recognised that the difficulties 10
 in assessing any health hazards which may
 be associated with cigarette smoking arise
 from the variety and complexity of the com-
 bustion products in the smoke which is inhaled.
 Many of the combustion products are difficult
 if not impossible to isolate and are present
 15 in such small quantities that their phar-
 macological activity cannot be properly de-
 termined. Various approaches have been used in
 the past for controlling the combustion pro-
 ducts which are inhaled, either by replacing
 20 natural tobacco with a substitute material of
 known composition, or by means of filter plugs
 through which the smoke is drawn.

We have now conceived a fundamentally 25
 new approach in which a smoking material is
 composed of a matrix of a simple fuel which
 has mechanical properties, that is flexibility
 and self-cohesion, and, when made up into
 cigarette rod form, hardness and porosity,
 30 similar to those of natural tobacco, the fuel
 being impregnated or otherwise associated with
 volatile solid or liquid constituents which are
 capable of distilling or subliming into a smoke
 stream without chemical change and thus pro-
 35 viding smoke to be inhaled upon burning of
 the fuel.

By a simple fuel is meant a material which
 burns in atmospheric air to produce preferably
 known simple combustion products of well
 40 understood toxicology. The most useful fuel
 is carbon which burns to simple gaseous oxides
 having a well understood chemistry and with no
 unknown health risks. However, the use
 of carbon in the form of charcoal, as has
 45 previously been proposed for use as a fuel in
 analogous fields is unsatisfactory because the
 carbon fuel in that form is incapable of being
 handled on conventional cigarette making
 machinery and other tobacco handling equip-
 ment.

We find that the criterion can be satisfied
 by a fuel comprising a self coherent mass of
 combustible flexible fibres each of which has
 a cross sectional dimension of between 5 and
 50 microns and which are made of a carbon-
 55aceous material containing at least 80% carbon
 by weight, which material is the product of
 the controlled pyrolysis of a cellulose-based
 fibrous material containing only carbon, hydro-
 gen, and oxygen.

The invention also includes a method of
 preparing a combustible fuel for smoking by
 human beings, the method comprising providing
 a self-coherent mass of flexible cellulose-
 based fibres containing only carbon, hydrogen
 and oxygen, and subjecting the mass to a
 60 controlled pyrolysis until the fibrous mass
 contains at least 80% carbon by weight, and
 the fibres have a cross-sectional dimension
 between 5 and 50 microns.

The basically fibrous nature of the carbon-
 65aceous fuel, of which the fibres may have a
 cross sectional dimension between 5 micron
 and 50 micron, contributes to the flexibility
 and mechanical strength of the fuel and to
 the ability of the fuel particles to hold together
 without the need for binders or other adhesive
 aids. The fibres may be additionally crimped
 or intertwined to further improve the self-
 cohesion of the material. A matrix of the fuel
 70 can be handled on mechanical devices for
 cigarette making and can be easily formed
 into cigarettes with an acceptable pressure
 drop for smoking.

For instance, we have found that fuels
 made from coarse fibres or mixtures including
 coarse fibres such as pyrolysed coir or sisal
 with cross-sectional dimensions up to 300
 75 microns were brittle and not flexible and did
 not cohere easily together. During handling
 and transformation of such material to a
 cigarette form many of these fibres broke and
 dust and fine particles were formed.

However, for fine fibres such as pyrolysed
 cotton or ramie with cross sectional dimensions
 from 5 to 20 microns, the fibres were flexible
 and self-coherent and could be transformed
 80 into an acceptable cigarette form without
 significant breakage.

50

55

60

65

70

75

80

85

90

95